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COMPOSITE THERMOPLASTIC RESIN MATERIAL AND ITS PRODUCTION

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Abstract

PROBLEM TO BE SOLVED: To produce a composite thermoplastic resin material improved in mechanical strengths, heat resistance, surface smoothness, dimensional stability, etc., by mixing a thermoplastic matrix resin with a fibrous double-chain structure clay mineral and a specified compatibilizing resin.

SOLUTION: One (100) pts.wt. fibrous double chain structure clay mineral having a pore diameter distribution of 10-100 μ m, a surface area of 250-400 m^2/g , a diameter of 0.005-0.3 μ m and a length of 0.02-50 μ m is mixed with 10-70 pts.wt. monomer for forming a compatibilizing resin and a polymerization catalyst to allow the clay mineral to adsorb the monomer and the catalyst. The obtained mixture is heated in an inert atmosphere to polymerize the monomer and to bond the monomer to the hydroxyl groups of the mineral to obtain a polymer mixture. This mixture is split under cooling to form a fibrous composite clay mineral material. One hundred (100) pts.wt. thermoplastic matrix resin is mixed with 5-70 pts.wt. fibrous composite clay mineral material, and the mixture is melt-kneaded to compatibilize the compatibilizing resin of the fibrous composite clay mineral material with the thermoplastic matrix resin.

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